REMARKS

I. Introduction

The present application is directed to immunostimulant compositions. These compositions are particularly useful for mucosal administration of vaccines, especially by intranasal routes.

Claims 2-3, 5, 11-12 and 14-25 have been cancelled without prejudice. Claims 14-26 were directed to a non-elected invention. Claims 26-28 and 30-32 have been withdrawn from consideration as being drawn to a non-elected species. New Claim 34 has been added. Upon entry of the present amendment, Claims 1, 4, 6-10, 13 and 26-34 will be pending in this application. No new matter is added and support for the amendments is found throughout the specification and in the original claims.

II. Rejections based on 35 U.S.C. § 102

The Examiner rejected Claims 1, 4, 6-9, 12-13, 29 and 33 under 35 U.S.C. §102(b) as anticipated by Duncan *et al.* (WO 94/20070). Applicants respectfully traverse this rejection.

The Examiner stated that Duncan *et al.* teach a vaccine composition containing pharmaceutically acceptable particles and an adjuvant chemical such as a positively charged cationic block copolymer. The Examiner referenced pages 9-10 of Duncan *et al.*, which discloses the use of Pluronic® block copolymers to make stable squalene emulsions, which are useful as adjuvants.

Applicants respectfully submit that the Pluronic™ block copolymers described by Duncan *et al.* are **nonionic** and therefore **cannot** be positively charged cationic copolymers as claimed in the present application. This fact was previously recognized by the Examiner on page 4, lines 16-17 of the Office Action mailed June 25, 2004, which stated, "The Examiner respectfully acknowledges Pluronic ® trademark owner, BASF are non-ionic in nature...." See also the response and enclosures filed March 19, 2004 in which applicants amended section C of Claim 1 to further define the composition as a positively charged cationic block copolymer or a positively charged cationic surfactant and clearly explained that the range of Pluronic® block copolymers suggested in the Duncan *et al.* reference fails

to include positively charged cationic block copolymers. The BASF block copolymers suggested by Duncan *et al.* are clearly **nonionic** in nature as shown on the BASF website (www.basf.com), THE CONDENSED CHEMICAL DICTIONARY and sections from the book, SURFACTANT SYSTEMS. Copies of these enclosures were submitted with the Response filed March 19, 2004. By definition, nonionic chemicals are **not** positively (nor negatively) charged. Accordingly, applicants submit that the published PCT application of Duncan *et al.* fails to teach every element of the claimed composition and is therefore insufficient as a 35 U.S.C. §102 reference.

In view of the fact that Duncan *et al.* fails to disclose the use of positively charged cationic copolymers, for the reasons set forth above, it is irrelevant whether or not the immunostimulant properties of the compounds were recognized by one skilled in the art. The composition of Claim 1 is physically different from anything disclosed specifically in Duncan *et al.* because Duncan *et al.* fail to teach positively charged block copolymers or positively charged surfactants.

Therefore, Claims 1, 4, 6-9, 12-13, 29 and 33 are novel over Duncan *et al.* and the rejection under 35 U.S.C. §102 should be withdrawn.

III. Rejections based on 35 U.S.C. § 112, first paragraph (written description)

The Examiner rejected Claims 1, 4, 6-10, 12-13, 29 and 33 under 35 U.S.C. §112, first paragraph, as failing to comply with the written description requirement on the basis that the claims encompass every type of vaccine and biologically active agent that affects all types of diseases, disorders, and infections in any type of animal. Applicants respectfully submit that the amendments to the claims overcome this rejection.

Claim 1 has been amended to clarify that the composition is an "immunostimulatory" composition rather than a "vaccine" composition. Support for this amendment can be found at least on page 3, lines 28-29.

The invention in this case lies in certain immunostimulant compounds and their ability, when incorporated into vaccine formulations, to enhance the immunostimulatory response. Applicants respectfully submit that the U.S. Patent Office routinely grants patents

on compositions containing biologically active agents and adjuvants without requiring detailed scientific data for a wide range of agents. For example, Claim 15 of U.S. Patent No. 6,267,987 to Park *et al.*, which was previously cited by the Examiner in the present application, provides a clear indication of the scope of a claim that the U.S. Patent Office considers allowable. Claim 15 of Park *et al.* recites a composition comprising any bioactive agent electrostatically coupled to a specifically defined polymer.

The active components of vaccines are well known in the art and to the skilled reader to whom the specification is addressed. No further description is needed. If one were making an improvement to devise a new accessory, for example, a new windshield wiper for a car, one could claim "a car having the windshield wiper" without defining or describing in detail all aspect of what constitutes the car, including all the various designs, engine types, etc. This is simply understood by the reader, and all features such as the engine, wheels and so forth, are implicit in the word "car".

In this case, the invention relates to improvements to immunostimulant formulations, which are useful as vaccines. It is reasonable to predict that the improvement is generically applicable to all vaccines. Vaccines, by their very nature, are protective because they induce a host's immune system to produce a response, which is specific to a particular pathogen. As a result, the immune system is "primed" so that when it "sees" the pathogen later, it readily attacks it. The better the level of immune response produced, the better the level of protection. Therefore, if one can affect the immune response on a general level to respond better, then one would expect enhancement for any vaccine. This is the function of immunostimulants.

Applicants have found and demonstrated that the components listed as (A) to (H) in Claim 1 act as immunostimulants. It is reasonable to predict that their ability to enhance an immune response is generically applicable to all biologically active agents that produce a protective immune response. In order to make and use the claimed composition, one skilled in the art need not be provided with a detailed description of how to produce the biologically active agent, so a detailed description of the biologically active agent is not required. Just as one skilled in the automotive art wanting to utilize new windshield wipers would not require

a description of the engine of the car, one skilled in the biological arts would not need a detailed description of all biologically active agents that produce a protective immune response in order to make and use an immunostimulatory composition containing a particular adjuvant.

Furthermore, the specification specifically describes how the invention can be applied to a range of biological agents that produce a protective immune response in a host mammal, including sub-unit vaccines and toxoids, which produce a protective immune response against pathogens. Specifically, these are sub-unit vaccines that produce a protective immune response against *Yersinia pestis* as well as tetanus toxoid, diphtheria toxoid, and *Bacillus anthracis* protective antigen (PA). It is clear therefore that the written description is adequate to support the present claims.

For at least the foregoing reasons, applicants submit that Claims 1, 4, 6-10, 12-13, 29 and 33 meet the written description requirement and, therefore, the rejection under 35 U.S.C. §112, first paragraph, should be withdrawn.

IV. Rejections based on 35 U.S.C. §112, first paragraph (New matter)

The Examiner rejected Claims 1, 4, 6-10, 12-13, 29 and 33 under 35 U.S.C. §112, first paragraph, as failing to comply with the written description requirement on the basis that the specification and original claims lacked support for water soluble vitamins, water soluble vitamin derivatives, positively charged cationic block copolymers and positively charged cationic surfactants, polymeric microcapsules obtainable using a double emulsion solvent evaporation method, and polymeric microcapsules having an adjuvant chemical incorporated at the surface.

Support for water-soluble vitamins and water-soluble vitamin derivatives can be found on page 5, line 14 of the present specification.

With regard to the positively charged cationic block copolymers and positively charged surfactants, support for each can be found on page 6, lines 4-9 of the present application, which states that members from section C can be either positively charged block copolymers or positively charged surfactants. Applicants respectfully submit that section C

of Claim 1 was amended in the Fourth Amendment and Response to Office Action filed August 5, 2005 to comply with the Examiner's request that Claim 1 be amended to replace alternative expressions with "Markush group" language or similar language. Applicants respectfully submit that section C recites "a member selected from the group consisting of positively charged cationic block copolymers and positively charged cationic surfactants". This recitation contains proper Markush group language for the alternative expression "a positively charged cationic block copolymer or a positively charged cationic surfactant". In addition, applicants have amended Claim 1 to include the conjunction "and" between sections G and H to ensure that correct Markush group language is used throughout the claim. If applicants have misunderstood the Examiner's suggestions in any way, clarification is respectfully requested.

Support for the use of a double emulsion solvent evaporation method for forming polymeric microcapsules can be found on pages 14, lines 1-2.

Support for the incorporation of an adjuvant chemical at the surface of microcapsules can be found on page 13, lines 33-35.

The Examiner also stated that applicants fail to point out or draw support to the teaching of a generic vaccine composition that can treat all infections and diseases. As discussed above in Section III of this Response, no claim to a generic vaccine composition is made and therefore support is not required.

For at least the above reasons, applicants respectfully submit they have overcome the rejections under 35 U.S.C. §112, first paragraph and request withdrawal thereof.

V. Objections to the Claims

The Examiner objected to Claims 12 and 33 under 37 CFR 1.75(c) as being of improper dependent form for failing to further limit the subject matter of a previous claim.

Claim 12 has been cancelled without prejudice.

Claim 1 allows for the composition to be administered to a mucosal surface or encapsulated in polymeric microcapsules. The microcapsules may be formed by a double emulsion solvent evaporation method or have the adjuvant incorporated on the surface of the

microcapsule. Claim 7 limits the composition to those employing microcapsules. Claim 33 further limits Claim 7 to a microcapsule having adjuvant chemical coated on the surface. Applicants respectfully submit the Claim 33 complies with 37 CFR 1.75(c) and request withdrawal of the objection.

In the interest of furthering prosecution and as suggested by the Examiner, applicants have rewritten Claim 33 in independent form and have added this independent claim as new Claim 34.

VI. Rejections based on 35 U.S.C. §103(b)

The Examiner rejected Claim 10 under 35 U.S.C. §103(a) as obvious over Duncan *et al.* in view of Griffin *et al.* (*Vaccine*, 16(5):517-521, 1998). The Examiner states that, although Duncan *et al.* does not teach microcapsules comprising poly(L-lactide), Griffin does teach the encapsulation of vaccine compositions with poly(L-lactide) and, therefore, it would have been obvious to combine the vaccine compositions of Duncan *et al.* with the microcapsules used by Griffin.

As discussed above under Section I, Duncan *et al.* fail to suggest the use of positively charged block copolymers or positively charged surfactants as adjuvants. Therefore, even if the teachings of Duncan *et al.* were combined with the teachings of Griffin, which applicants do not concede, the combined teachings would fail to include all the limitations of the claimed composition.

Therefore, applicants respectfully submit they have overcome the rejections under 35 U.S.C. §103(b) and request withdrawal thereof.

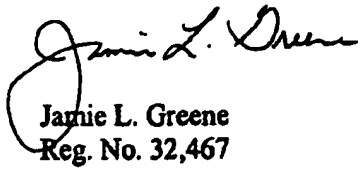
CONCLUSIONS

In light of the amendments and the above remarks, applicants are of the opinion that the Office Action has been completely responded to and that the application is now in condition for allowance. Such action is respectfully requested.

If the Examiner believes any informalities remain in the application that may be corrected by Examiner's Amendment, or there are any other issues that can be resolved by

telephone interview, a telephone call to the undersigned attorney at (404) 815-6500 is respectfully solicited.

Respectfully submitted,



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